June, 1960

OHIO AGRICULTURAL EXPERIMENT STATION
Wooster, Ohio

Forestry Department Series No. 44

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The Clapp Experimental Farm Woods

by

John Aughanbaugh

Three generations of the Clapp family at the dedication of this 60-acre tract as Ohio Tree Farm No. 7, January 25, 1948.

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The Clapp Experimental Farm Woods*
Experimental Forest No. 16
Ohio Tree Farm No. 7

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During September 1947 a 60-acre wooded tract on the Avery T. Clapp farm in Chatham Township, Medina County, was organized as Experimental Forest No. 16, under supervision of the Forestry Department of the Ohio Agricultural Experiment Station. It became one of a series of 28 such experimental woodlands established to date within Ohio. Subsequently, on January 25, 1948, it was dedicated as Ohio Tree Farm No. 7, chosen and sponsored by the Ohio Forestry Association.

Situated on fairly level land in the watershed of the Black River, this promising all-aged, beech-maple stand is being managed to secure information on the growth rate and output of forest products obtainable from Ohio's small woodlands. Operated primarily as a sugar bush, it provides an annual farm income from its maple syrup and wood products.

The Clapp woods grows on soils of the Rittman-Wadsworth-Trumbull series. These are light colored, strongly acid soils

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*Given at the summer meeting of the Ohio Forestry Association, July 22-23, 1960.

developed from glacial till containing shale, sandstone, and considerable clay. They are below average in productivity.

The timber consists mainly of sugar maple, American elm, beech and white ash listed in their order of abundance. Other species are cucumber, basswood, aspen, hickory, red maple, black cherry, hop-hornbeam, red oak, swamp white oak, tuliptree and black walnut.

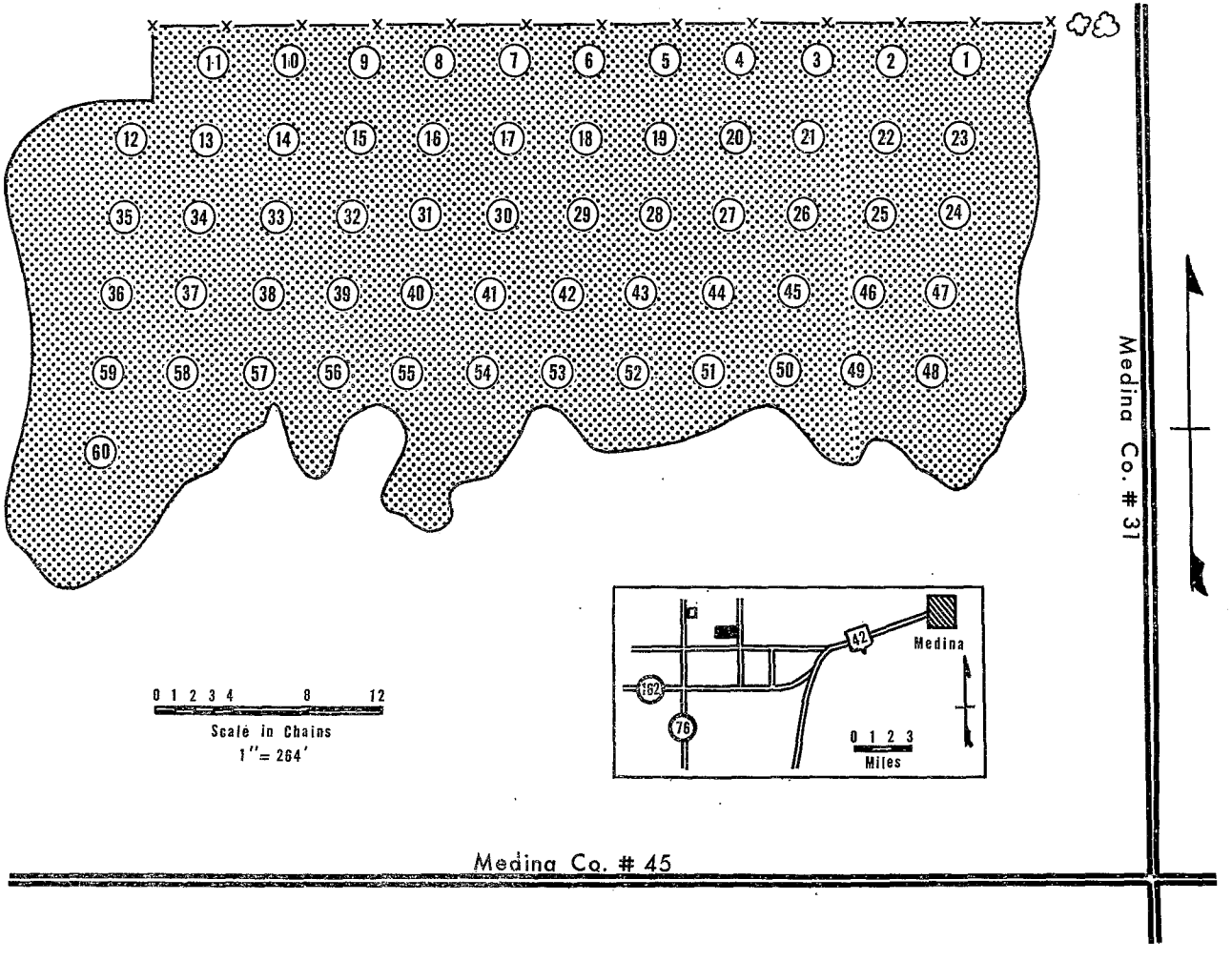
A continuous inventory of 60 permanent, 1/5th-acre, circular sample plots (Figure 2) determines the actual net board foot growing-stock according to species, tree diameter, grade and vigor classes. Recurrent measurements of the paint-numbered trees in the plots, taken usually at 5-year intervals, assess the periodic growth, ingrowth, mortality and cut attributable to the various species. Trees exceeding 6.9 inches at breast height ($4\frac{1}{2}$ feet above ground) were evaluated in September 1947, in December 1952, and again in March 1958. Data on the reproduction (saplings 1.0 through 6.9 inches d.b.h.) came from 1/100th-acre subplots located at the plot centers. During measurements, when the growth records at hand could serve as guides, enough mature, slow growing and unsound timber had been marked to make operable cuts for the woodsowner.

Cull Trees

Like most farm woodlands, this tract harbors too many cull trees. Table 1 lists their numbers noted at the first and last inventories. Records for 1947 gave an average of almost seven sawlog-size culls per acre. By 1958, however, they had been reduced to about five. The majority of the culls are beech and sugar maple.

FIG. 2

OUTLINE MAP OF
CLAPP EXPERIMENTAL FOREST



Present or potential usefulness of these cull trees for sawlogs is practically nil. Nevertheless, many a sugar bush operator is unduly hesitant to cut or to deaden a tappable maple, regardless of its form, grade or vigor.

In Ohio, and throughout the nation, sawtimber qualities are steadily deteriorating. The proportion of cull, weed, defective and deformed trees, and of small diameter sawlogs, is on the increase. Today only 20 percent of our timber makes satisfactory growing-stock; the rest averages no better than grade 3 logs, the market value of which barely justifies their use. One of every five or six sawlog-size trees actually is a cull — a deterrent to effective silviculture. Conversely, logs suitable for face veneer or for furniture stock bring premium returns, and that price differential between prime and ordinary logs offers a good incentive for intensive forest management.

The cull tree problem always has been a most difficult one to combat. Unwanted trees which are unprofitable to cut must be girdled or poisoned for the forest to grow high quality wood products at its maximum capacity. If treated in such manner, a cull tree disintegrates piecemeal and causes the least amount of injury to promising trees nearby.

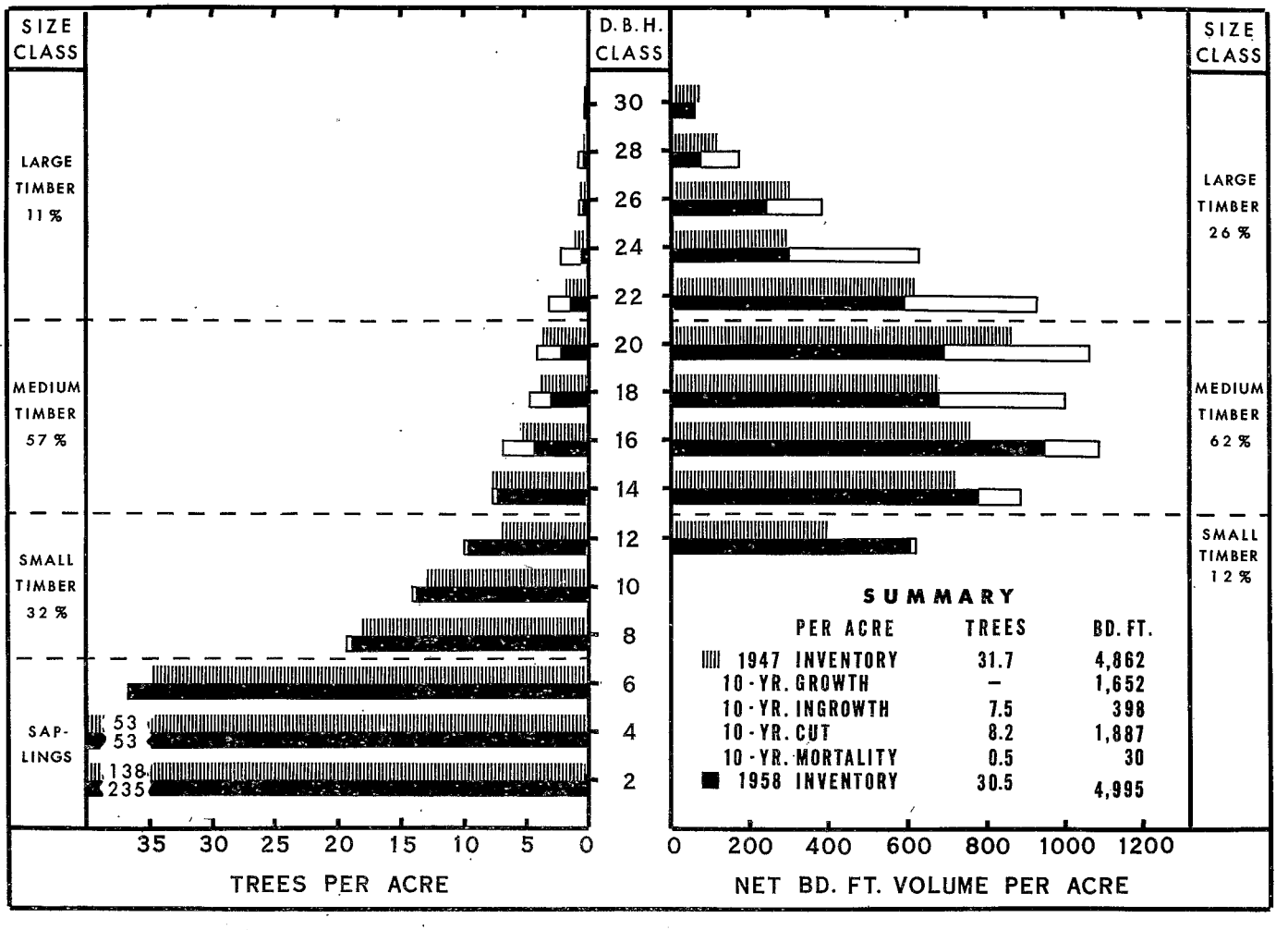
Agricultural conservation payments to cover labor costs are available to farm woodland owners wishing to practice forestry. But even without the payment, woods improvement measures can be profitable investments that eventually result in more and better timber.

Merchantable Stand

Shown graphically in Figure 3 is the stand structure of the Clapp woods by tree size classes, ranging from saplings to overmature timber. It exhibits the parabolic distribution pattern characteristic of good woodlands. Here is the distribution by number of trees per acre: small timber (8 to 12 inches diameter breast high), 32 percent; medium timber (14 to 20 inches), 57 percent; and large timber (22 to 30 inches), 11 percent. By volume, the respective percentages are 12, 62, and 26. There now are 30.5 sawlog-size trees per acre exceeding 10.9 inches diameter breast high.

Board foot production culminates at 16 to 20 inches d.b.h. and is steadily increasing. The first inventory showed 4,862 bd.ft. per acre net (after deductions for defects). During the succeeding 10 years 1,917 bd.ft. either were cut or died, but growth and ingrowth amounted to 2,050 bd.ft., thus accounting for today's stocking of 4,995 bd.ft. net per acre. From 1947 to 1958 the cut, growth and ingrowth combined (that is to say, the overall production) was 394 net bd.ft. per acre annually, equaling 8.1 percent if computed at simple interest.

Table 2 depicts the composition of the Clapp farm woods. Sugar maples predominate, both from the standpoint of tree numbers and merchantable volume. Beech formerly had ranked first, but since then over 70 percent of the beech were cut. Elm because of disease has become a "high risk" tree. For replacements sugar maple, red oak, and white ash are to be favored, as well as cucumber, tulip-tree, and black walnut.



GROWING-STOCK IN CLAPP FARM WOODS

CHATHAM TOWNSHIP, MEDINA COUNTY, OHIO

1947-1958

Figure 3.

Reproduction

Wherever openings had resulted from the removal of large trees, abundant reproduction has become established. At various places on the west side of the tract dense thickets of sugar maple exist. Elsewhere, heavy competition from unwanted species, notably hop-hornbeam (ironwood) and hickory, merits effective control measures including girdling and poisoning.

Figure 3 indicates the presence of ample reproduction. There are 235 trees per acre in the 2-inch diameter class, practically double those at the initial inventory. Status of the 4-inch saplings did not change. Poles of 6, 8, and 10-inch size increased somewhat since 1947. Fortunately, this woodland rarely or perhaps never had been grazed.

Future Prospects

It is anticipated that within another five years few culls, defective or deformed trees will remain. The silvicultural goal is continuous production of the most and best timber suited to the site. Good cultural practices alone can point the way to an ideal stand.

Formerly handled for home use, the Clapp woods of today can also furnish commercial forest products. It is capable of yielding fine hardwood sawtimber, in addition to being an efficient sugar bush. Each passing year should find its composition, density, growth rate, and dependable earnings improved.

Table 1.

Sawlog-size Cull Trees in Clapp Woods
(Present on the 60 Acres)

Species	Diameter Class at Breast Height - Inches																				Totals	
	12"		14"		16"		18"		20"		22"		24"		26"		28"		30"		32"		34"		36"		38"			
	A[1]	B[2]	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
Beech	30	25	10	5	35	25	40	20	45	15	60	25	10	5	15	5	10	10	5	5			10	10			5	5	270	150
Sugar maple			10	10	15	15	15	15	15	15	15	15	5	5	5	5													80	80
Am. elm	5	5			5	5					5	5																	15	15
White ash	5	5																									5	5	10	10
Red maple	10	10											5	0															15	10
Hop-hornbeam	5	5																											5	5
Basswood																	5	5											5	5
Totals	55	55	20	15	55	45	55	35	60	30	80	45	20	10	20	10	15	15					10	10			5	5	400	275

1/ No. of cull trees present in 1947 -- A

2/ No. of cull trees present in 1958 -- B

Table 2.

Species Growing in Clapp Farm Woods
(Data on per acre basis)

Species	Trees of Sawlog Size		Cut	Mortality	Growth	Ingrowth	Net Volume[1]/	
	No.		Bd. Ft.				Bd. Ft.	
	1947	1958	1947 to 1958				1947	1958
Sugar maple	9.5	9.6	20	17	529	22	1,586	2,100
American elm	5.3	5.7	252	10	225	95	535	593
Beech	9.7	4.9	1,322	-	338	24	1,807	847
White ash	3.2	5.2	-	-	257	102	279	638
Hickory[2]/	0.3	0.8	-	-	27	35	55	117
Red maple	0.6	1.0	44	-	35	42	65	98
Tuliptree	1.3	1.3	144	-	132	28	291	307
Black cherry	0.1	0.5	4	-	14	27	6	43
Basswood	0.5	0.5	15	-	31	5	94	115
Others[3]/	1.2	1.0	86	3	64	18	144	137
Totals	31.7	30.5	1,887	30	1,652	398	4,862	4,995

1/ Defect deduction factors, for each tree, gave net volumes. Trees scaled by International $\frac{1}{4}$-inch log rule.

2/ Shagbark, bitternut and pignut.

3/ Red oak, swamp white oak, hop-hornbeam, large-tooth aspen, red elm, cucumber, black walnut.